



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/817,074	04/02/2004	Poter Mitchell	M109US-RECY	4971

7590 03/26/2007
Maxwell Technologies, Inc.
Att. Intellectual Property Dept.
9244 Balboa Ave.
San Diego, CA 92123

EXAMINER

THOMAS, ERIC W

ART UNIT	PAPER NUMBER
----------	--------------

2831

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/26/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/817,074

Applicant(s)

MITCHELL ET AL.

Examiner

Eric Thomas

Art Unit

2831

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 December 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-78 is/are pending in the application.
- 4a) Of the above claim(s) 27-38 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 39-53, 76 and 77 is/are allowed.
- 6) ☒ Claim(s) 1-18, 21-26, 54-72, 74, 75 and 78 is/are rejected.
- 7) ☒ Claim(s) 19, 20, 58 and 73 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>12/06, 11/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3, 21-26, 64-68, 75, 78 are rejected under 35 U.S.C. 102(b) as being anticipated by Kau (EP 0617441).

Kau discloses an energy storage product comprising a mix of carbon and binder particles. Although not expressly stated, the carbon and binder particles are inherently recyclable (when the structure recited in the references is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent).

Regarding claim 2, Kau discloses at least some of the mix is dry fibrillized.

Regarding claim 3, Kau discloses the mix consists of no processing additive (see page 5 lines 20-25).

Regarding claim 21, Kau discloses an energy storage product comprising a dry mix of dry binder and dry carbon particles, the particles formed onto a continuous self-supporting electrode film without the substantial use of any processing additives. Although not expressly stated, the carbon and binder particles are inherently recyclable (when the structure recited in the references is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent).

Regarding claim 22, Kau discloses the processing additives includes hydrocarbons, high boiling point solvents, antifoaming agents, surfactants, dispersion aids, water, pyrrolidone, mineral spirits, ketones, naphtha, acetates, alcohols, glycols, toluene, xylene, and/or Isopars.

Regarding claim 23, Kau discloses the dry binder is a dry fibrillized binder.

Regarding claim 24, Kau discloses the binder is fibrillized. Regarding the limitation, "the binder is fibrillized by a high pressure gas" is a method of forming the device. The method of forming the device is not germane to the issue of patentability of the device itself. Therefore, this limitation has not been given patentable weight. In re STEPHENS, WENZL, AND BROWNE, 145 USPQ 656 (CCPA 1965)

Regarding claim 25, Kau discloses the binder is fibrillized under a shearing force. Regarding the limitation, "the binder is fibrillized by a high pressure gas" is a method of forming the device. The method of forming the device is not germane to the issue of patentability of the device itself. Therefore, this limitation has not been given patentable weight. In re STEPHENS, WENZL, AND BROWNE, 145 USPQ 656 (CCPA 1965).

Regarding claim 26, Kau discloses the binder is fibrillized under a shearing force. Regarding the limitation, "the binder is fibrillized by a high pressure gas" is a method of forming the device. The method of forming the device is not germane to the issue of patentability of the device itself. Therefore, this limitation has not been given patentable weight. In re STEPHENS, WENZL, AND BROWNE, 145 USPQ 656 (CCPA 1965).

Regarding claim 64, Kau discloses an energy storage device, comprising at least one electrode film, wherein the at least one electrode film is both conductive and

adhesive and wherein the at least one electrode film is coupled directly to a current collector (see fig. 1). Although not expressly stated, the film is inherently recyclable (when the structure recited in the references is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent).

Regarding claim 65, Kau discloses an energy storage device structure, comprising one or more self-supporting dry process based electrode film. Although not expressly stated, the film is inherently recyclable (when the structure recited in the references is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent).

Regarding claim 66, Kau discloses the film comprises conductive and adhesive particles.

Regarding claim 67, Kau discloses the adhesive particles comprise a thermoplastic.

Regarding claim 68, Kau discloses the electrode is a capacitor battery electrode.

Regarding claim 75, Kau discloses an energy storage device comprising a plurality of carbon and binder particles formed as an electrode, wherein as compared to an electrode formed of a plurality of substantially similar carbon and binder particles processed with a processing additive, the dry processed carbon comprises less residue (inherent feature). Although not expressly stated, the dry processed carbon and binder particles are inherently recyclable (when the structure recited in the references is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent).

Regarding claim 78, Kau discloses an energy storage device, comprising dry process electrode means for providing electrode functionality in an energy storage device. Although not expressly stated, the dry processed electrode means is inherently recyclable (when the structure recited in the references is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent).

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 4-13, 59-63, 69-71, 74 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashida et al. (US 5,100,747) in view of Goller et al. (US 4,313,972).

Regarding claim 4, Hayashida et al. disclose an energy storage device comprising a film, the film including a mix of particles. Hayashida et al. disclose a housing vessel used to recover raw electrode mixture that falls from the current collector during the manufacturing process.

Hayashida et al. disclose the claimed invention except for the mix comprising a mixture of recycled particles.

Goller et al. teach that an excess raw electrode mixture from a process may be reclaimed and recycled.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to recycle the recovered raw electrode mixture back into the manufacturing process of Hayashida et al., since such modification would conserve resources and reduce waste.

Regarding claim 5, Hayashida et al. disclose the particles are fibrillized.

Regarding claim 6, Hayashida et al. disclose the recycled particles are fibrillized.

Regarding claim 7, Hayashida et al. disclose the film is a self-supporting film.

Regarding claim 8, Hayashida et al. disclose the claimed invention except for the film comprises a thickness of less than 250 microns. It would have been an obvious matter of design choice to form the film having a thickness of less than 250 microns, since such a modification would have involved a mere change in the size of a component, a change in size is generally recognized as being within the level of ordinary skill in the art. *In re. Rose*, 105 USPQ 237 (CCPA 1955).

Regarding claim 9, Hayashida et al. disclose the claimed invention except for the film has a length of 1 meter. It would have been an obvious matter of design choice to form the length of the film to be at least 1 meter, since such a modification would have involved a mere change in the size of a component, a change in size is generally recognized as being within the level of ordinary skill in the art. *In re. Rose*, 105 USPQ 237 (CCPA 1955).

Regarding claim 10, Hayashida et al. disclose the film is coupled directly to the substrate.

Regarding claim 11, Hayashida et al. disclose the film comprises substantially no processing additives.

Regarding claim 12, Hayashida et al. disclose the substrate comprises a collector.

Regarding claim 13, Hayashida et al. disclose the product comprises a collector, and wherein the film is coupled to the collector.

Regarding claim 59, Hayashida et al. disclose an energy storage device comprising a housing (64, 67), a collector, the collector a having an exposed surface; an electrolyte (col. 6 lines 23-25), the electrolyte disposed with the housing; an electrode film, the electrode film comprises of particles (from 30), wherein the electrode film is impregnated with the electrolyte, and wherein the electrode film is coupled directly to the exposed surface. Hayashida et al. disclose a housing vessel used to recover raw electrode mixture that falls from the current collector during the manufacturing process.

Hayashida et al. disclose the claimed invention except for the mix comprising a mixture of recycled particles.

Goller et al. teach that an excess mixture from a process may be reclaimed and recycled.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to recycle the recovered raw electrode mixture back into the manufacturing process of Hayashida et al., since such modification would conserve resources and reduce waste.

Regarding claim 60, Hayashida et al. disclose the electrode film is substantially insoluble in the electrolyte.

Regarding claim 61, Hayashida et al. disclose the electrode comprises a binder wherein the binder is substantially insoluble in the electrolyte.

Regarding claim 62, Hayashida et al. disclose the binder comprises a thermoplastic and wherein the thermoplastic couples to the electrode film to the collector.

Regarding claim 63, Hayashida et al. disclose the claimed invention except for the electrolyte is an acetonitrile type of electrolyte.

Acetonitrile type electrolyte is well known in the art. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to form the electrolyte of Hayashida et al. using the well-known acetonitrile type electrolyte, since such a modification would provide an electrolyte having good electrically conductivity, and it has been held to be within the general skill of a worker in the art to select a known

material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416.

Regarding claim 69, Hayashida et al. disclose an electrode comprising a collector; and a dry processed based electrode film, wherein the electrode film is coupled to the collector, wherein the electrode film comprises recycled conductive particles and binder particles. Hayashida et al. disclose a housing vessel used to recover raw electrode mixture that falls from the current collector during the manufacturing process.

Hayashida et al. disclose the claimed invention except for the mix comprising a mixture of recycled particles.

Goller et al. teach that an excess mixture from a process may be reclaimed and recycled.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to recycle the recovered raw electrode mixture back into the manufacturing process of Hayashida et al., since such modification would conserve resources and reduce waste.

Regarding claim 70, Hayashida et al. disclose between the collector and the electrode film there exists only one distinct interface.

Regarding claim 71, Hayashida et al. disclose the binder particles comprise a thermoplastic.

Regarding claim 74, Hayashida et al. disclose the conductive particles comprise a metal.

4. Claims 4, 18, 54-56, 57, 69, 72 rejected under 35 U.S.C. 103(a) as being unpatentable over Kau (EP 0617441) in view of Sloop (US 2003/0186110).

Kau discloses an energy storage product comprising a mix of carbon and binder particles. Kau discloses the claimed invention except for at least some of the carbon and binder particles are recycled particles.

Sloop teaches that solid materials such as carbon (graphite) can be reused in batteries.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to form the battery of Kau using the recycled graphite carbon of Sloop, since such a modification would form the electrode using recycled carbon. Recycled materials benefit the environment by extending the life of resources, and reducing pollution.

Regarding claim 18, Kau discloses at least some of the particles comprise fibrillizable fluoropolymer.

Regarding claim 54, Kau discloses an energy storage device comprising at least on continuous self-supporting intermixed film structure comprised of carbon binder particles consisting zero parts per million processing additive (dry process).

Kau discloses the claimed invention except for the carbon particles are recycled particles.

Sloop teaches that solid materials such as carbon (graphite) can be reused in batteries.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to form the battery of Kau using the recycled graphite carbon of Sloop, since such a modification would form the electrode using recycled carbon. Recycled materials benefit the environment by extending the life of resources, and reducing pollution.

Regarding claim 55, Kau disclose the processing additives includes hydrocarbons, high boiling point solvents, antifoaming agents, surfactants, dispersion aids, water, pyrrolidone, mineral spirits, ketones, naphtha, acetates, alcohols, glycols, toluene, xylene, and/or Isopars.

Regarding claim 56, Kau discloses the intermixed film structure is an electrode film.

Regarding claim 57, Kau discloses the film structure is an energy storage device electrode film.

Regarding claim 69, Kau discloses a collector; and a dry process based electrode film wherein the electrode film is coupled to the collector; wherein the electrode film comprises conductive particles and binder particles.

Kau discloses the claimed invention except for the carbon particles are recycled particles.

Sloop teaches that solid materials such as carbon (graphite) can be reused in batteries.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to form the battery of Kau using the recycled graphite carbon of

Sloop, since such a modification would form the electrode using recycled carbon. Recycled materials benefit the environment by extending the life of resources, and reducing pollution.

Regarding claim 72, Kau discloses the conductive particles comprise conductive carbon.

5. Claims 14, 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugeno (US 2003/0113636) in view of Sloop (US 2003/0186110).

Sugeno discloses a lithium secondary battery comprising a film, the film including a mix of particles, a collector (5), wherein the film is coupled directly against a surface of the collector, wherein the collector comprises two sides, wherein one film is calendered directly against one side of the collector, and wherein a second film is calendered directly against a second side of the collector (see col. 3 lines 35-55).

Sugeno disclose the claimed invention except for the particles are recycle particles.

Sloop teaches that solid materials such as carbon (graphite) can be reused in batteries.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to form the battery of Sugeno (anode) using the recycled graphite carbon of Sloop, since such a modification would form the electrode using recycled carbon. Recycled materials benefit the environment by extending the life of resources, and reducing pollution.

Regarding claim 16, Sano et al. disclose the collector is formed to comprise a roll.

6. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sugeno (US 2003/0113636) and Sloop (US 2003/0186110) as applied to claim 14 above, and further in view of Liu et al. (US 5,720,780).

Sugeno discloses the claimed invention except for the treated current collector.

Liu et al. (see example) teaches the use of an anode current collector useable in a battery wherein the current collector is treated.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to treat the current collector of Sugeno as taught by Liu et al., since such a modification would roughen the collector (increased surface area).

7. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sugeno (US 2003/0113636) and Sloop (US 2003/0186110) as applied to claim 14 above, and further in view of Sano et al (US 2003/0113636).

Sugeno et al. disclose the claimed invention except for the casing is formed from aluminum.

Sano et al. teach the use of a casing comprising aluminum. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to form the battery of Sugeno et al. having a casing formed from aluminum, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416.

Allowable Subject Matter

8. Claims 39-53, 76-77 are allowed.
9. Claims 19-20, 58, 73 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

10. Applicant's arguments filed 12/8/06 have been fully considered but they are not persuasive.

2112.01 [R-3] PRODUCT AND APPARATUS CLAIMS — WHEN THE STRUCTURE RECITED IN THE REFERENCE IS SUBSTANTIALLY IDENTICAL TO THAT OF THE CLAIMS, CLAIMED PROPERTIES OR FUNCTIONS ARE PRESUMED TO BE INHERENT

Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established. In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). "When the PTO

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the

Art Unit: 2831

references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, it would have been obvious to recycle the mixture collected in the housing vessel of Hayashida, since such a modification would conserve resources and reduce waste.

11. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to form the battery of Kau using the recycled graphite carbon of Sloop, since such a modification would form the electrode using recycled carbon. Recycled materials benefit the environment by extending the life of resources, and reducing pollution.

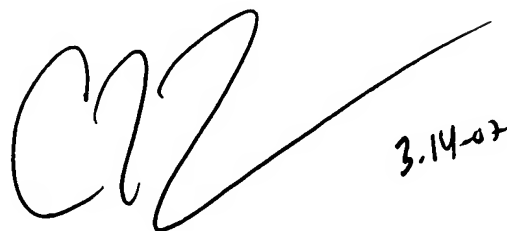
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric Thomas whose telephone number is 571-272-1985. The examiner can normally be reached on Monday - Friday 6:30 AM - 3:45 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dean Reichard can be reached on 571-272-1984. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ewt

A handwritten signature, possibly 'CJZ', followed by a long horizontal line. To the right of the line, the date '3.14.07' is written.